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By E. L. TODD

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NOTES AND DESCRIPTIONS OF SOME AMERICAN AGARISTINE MOTHS (LEPIDOPTERA: NOCTUIDAE)

By E. L. Todd[1]

The following notes on and descriptions of agaristine moths are primarily the result of studies of the noctuid fauna of Cuba but include comments on specimens from other areas of America. The studies have been based mainly on specimens in the collection of the U.S. National Museum, supplemented by material from the collections of C. P. Kimball, Barnstable, Mass., Ing. Fernando de Zayas Munoz and Dr. Pastor Alayo Dalmau, Habana, Cuba, and photographs of types in the British Museum (Natural History), supplied through the courtesy of D. S. Fletcher and the authorities of that institution.

Euthisanotia unio Hübner

Euthisanotia unio Hübner [1827–1831], Zuträge zur Sammlung exotischer Schmetterlinge, Drittes Hundert, p. 12, figs. 431, 432.

A single specimen labeled "Havana, Cuba, Baker" is in the collection of the U.S. National Museum. It undoubtedly represents a stray from the north, an introduced specimen, or one that has been

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incorrectly labeled. To my knowledge, the species has not been collected in Cuba by any of the Cuban lepidopterists.

Caularis undulans Walker

Caularis undulans Walker, 1857, List of the specimens of lepidopterous insects in the collection of the British Museum, pt. 12, p. 801.
Eudryas bartholomaei Boisduval, 1874, Rev. Mag. Zool., ser. 3, vol. 2, p. 59.

This species (fig. 18) may be separated from *C. lunata* Hampson (fig. 16) by the absence of the discal spot in the hindwing. *C. undulans* Walker differs from *C. jamaicensis*, new species (fig. 17), in that the white scales near the tornus of the forewing form a short longitudinal bar as in *lunata*, and the basal tuft of the abdomen is white medially, not a uniformly black transverse patch.

The original description was based on a male from Santo Domingo [Dominican Republic]. The type of the synonym, *E. bartholomaei* Boisduval, is a female from Saint-Barthélemy Island. In addition to the types, there are three specimens in the British Museum (Natural History). The additional specimens are an unlabeled female, a male from Jamaica, and another male from Puerto Rico. Seven specimens from Puerto Rico and one specimen from Cruz Bay, Saint John, Virgin Islands are in the collection of the U.S. National Museum.

Caularis lunata Hampson

Caularis lunata Hampson, 1904, Ann. Mag. Nat. Hist., ser. 7, vol. 14, p. 169.

Hampson described this species from two females from Nassau, Bahamas. In the British Museum the only specimens are the two syntypes. Both are labeled "Bahamas, Sir. G. Carter [accession number], 1904–200." One specimen marked as type has rather faded hindwings. It has been selected and labeled as lectotype because it was marked type, and because it obviously was the specimen figured by Hampson, 1910 (Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 9, p. 406, pl. 145, fig. 31). Three males in the collection of the U.S. National Museum (two received as a gift from Ing. Zayas) from localities in Oriente Province of Cuba are referable to this species. Both sexes possess a moderately heavy, terminal, fuscous band between veins $Sc+R_1$ and M_3 of the hindwing.

This species is easily recognized by the presence of a large dark discal spot in the hindwing (fig. 16).

Caularis jamaicensis, new species

Caularis undulans Walker.—Hampson, 1910, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 9, p. 406, fig. 191.

Description: Eyes large, hemispherical, naked; ocelli small, located above margin of eye immediately caudad of base of antenna; antenna

pectinate in male, weakly serrate in female; frons provided with a slender, conical prominence, the apex rounded and minutely depressed as in *undulans*, diameter of apex smaller than in *lunata;* labial palpi nearly porrect, first and second segments mostly black except loose ventral fringe mixed black and white and apical fourth of second segment with some white scales, third segment small, clothed with appressed, mixed dark and light scales. Vestiture mostly of hair and hairlike scales, head gray in appearance, a mixture of dark and white scales; collar mixed brown and white; tegulae and thorax red brown becoming darker toward posterior; abdomen pale yellow with a transverse tuft of blue-black iridescent scales on first segment; pectus pale yellow or white. Legs moderately long; forelegs dark, scaling mixed brown, black and white, middle legs much paler but of mixed dark and light scales, hindlegs pale; all legs with a moderate fringe of scales on femora.

Pattern of maculation as illustrated (fig. 17). Forewing with postmedial line dark reddish brown; basal spot along inner margin, area around reniform and orbicular spots, and subterminal area distad of postmedial line dull olive green; anterior half of subterminal area suffused with darker red-brown scales; median area including ordinary spots and terminal area suffused with dark gray, metallic scales that tend toward a violet iridescence; a narrow V formed by two vague white lines above tornus; fringe brown, darker at tornus. Hindwing mostly yellow orange; a vague salmon-colored marginal band from apex to Cu_1; cell Cu_1 with a black spot covering half or more of the salmon spot; cell Cu_2 with an extensive broad salmon spot bordered or partially bordered with black; fringe yellow or whitish from apex to middle of cell Cu_1, then metallic black to anal angle. Wings ventrally dull yellow with some salmon suffusion toward apex of forewing and margin of hindwing; reniform and sometimes orbicular spots of forewing weakly indicated. Length of forewing: Male 18 to 19 mm., female 19 to 21 mm.

Type male, Jamaica, USNM 64644 and two male paratypes, Jamaica, in the U.S. National Museum, Washington, D.C. Two male paratypes, Runaway Bay, Jamaica, April 1905, Walsingham; one male paratype, Jamaica; one male paratype, Moneague, Jamaica, April 9, 1928, 1200 ft., Dr. F. W. Jackson; one male paratype, Jamaica, Yates; one male paratype, Jamaica, Dr. Jackson; one female paratype, Sturridge, Jamaica; one female paratype, Saint Ann, Jamaica, Martin, in the British Museum (Natural History), London, England.

This species was erroneously figured by Hampson (1910, fig. 191) as *undulans*. It differs from that species in that white lines near the tornus of the forewing form a V, and the tuft of scales on the first abdominal segment form a uniformly black transverse patch.

It lacks the large black discal spot of the hindwing that is present in *lunata*.

Euscirrhopterus Grote

Euscirrhopterus Grote, 1866 (July), Proc. Ent. Soc. Philadelphia, vol. 6, p. 176; 1867, Proc. Ent. Soc. Philadelphia, vol. 6, pp. 310, 329.—Gundlach, 1881, Contribución á la Entomologiá Cubana, Lepidopteros, vol. 1, p. 234.—Möschler, 1890, Abh. Senckenberg Naturf. Ges., vol. 16, p. 349. [Type-species: *Euscirrhopterus poeyi* Grote, monobasic.]

Euschirrhopterus [sic] Grote—Kirby, 1892, A synonymic catalogue of Lepidoptera Heterocera, vol. 1, p. 40. [A misspelling.]

Euschirropterus [sic] Grote—Hampson, 1901, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 3, p. 619.—Jordan, 1908, Nov. Zool., vol. 15, no. 1, p. 254.—Strand, 1912, Lepidopterorum catalogus, pt. 5, p. 28.—Draudt, 1919, *in* Seitz, Gross-Schmetterlinge der Erde, vol. 7, p. 4.—Hampson, 1920, Catalogue of the Lepidoptera Phalaenae in the British Museum, Supplement, vol. 2, pp. 583–584.—Forbes, 1939, Bull. Mus. Comp. Zool., vol. 85, no. 4, p. 230.—Bruner, Scaramuzza, and Otero, 1945, Cuba Estac. Expt. Agron. Bol. 63, p. 141. [A misspelling.]

Heterandra Herrich-Schäffer, 1866 (September), Corresp. Blatt Zool.-Min. Verein. Regensburg (Naturw. Ver. Regensburg), vol. 20, p. 134. [Type-species: *Heterandra disparilis* Herrich-Schäffer, monobasic.]

Laquea Jordan, 1896, Nov. Zool. vol. 3, p. 41.—Druce, 1896, *in* Godman and Salvin, Biologia Centrali-Americana, Insecta, Lepidoptera, Heterocera, vol. 2, p. 329. [Type-species: *Euthisanotia argentata* Druce, original designation and monobasic.]

In 1867 Grote ("Notes on the Zygaenidae of Cuba, PartII," loc. cit.) treated *Heterandra disparilis* Herrich-Schäffer as generic and specific synonyms of his own *Euscirrhopterus poeyi*. He cited his names as published in July 1866 and Herrich-Schäffer's in September of that year. Since that time most authors have utilized *Euscirrhopterus* Grote or one of two misspellings of the name and also the specific name *poeyi*. Grote did submit part I of the paper for publication on February 12, 1866. Grote's cited date of publication was apparently based on the printer's date on the lower right corner of the first page of each signature of the paper. Brown (1964, Trans. Amer. Ent. Soc., vol. 89, nos. 3, 4, p. 308, a paper on the dates of publication of the parts of the six volumes of the "Proceedings of the Entomological Society of Philadelphia") states that the earliest date of publication of number 2 of volume 6 (pp. 153–252) was March 4, 1867. According to Brown (1964, p. 306), the authors of articles published in this journal received 50 author's copies as each separate was printed. When the author had received all of the signatures containing his article, he was at liberty to distribute them. On the other hand, the society did not distribute such articles to the members and subscribers until all the signatures of a number had been printed, collated, and stitched. Brown considers that "the earlier dissemination by the

author is distribution of a 'pre-print' with no bibliographic standing." "The International Code of Zoological Nomenclature of 1961" does not exclude preprints. Preprints conform to the requirements of article 8, "What Constitutes Publication." Furthermore, they are not excluded under article 9, "What Does Not Constitute Publication." Recommendation 21D states: "Preprints should be definitely identified as such." This is, however, only a recommendation, and it was obviously not intended that the recommendation be retroactive.

The resolution of the problem of publication dates for these particular papers of Grote and Herrich-Schäffer is dependent upon answers to the following questions: Is the printer's date "July 1866" for Grote's paper accurate? If so, did Grote receive author's copies at that time or at some time prior to the distribution of the number by the society? Did he distribute copies prior to the society's distribution of the paper (Proc. Ent. Soc. Philadelphia, vol. 6, no. 2, pp. 153–252)? Is the date of publication for number 2 of volume 6 ("March 4, 1867") as Brown indicated? Were numbers of the yearbook (Corresp. Blatt Zool.-Min. Verein. Regensburg) that contained Herrich-Schäffer's paper published in July, August, and September of 1866?

In the absence of evidence to the contrary, the printer's date "July 1866" must be considered to be accurate. This date of printing does not seem unreasonable considering the fact that Grote had submitted the paper for publication 5 months previously.

We do not have any direct evidence that Grote did, in fact, receive author's copies prior to distribution of the number by the society. Brown (1964, p. 306) has indicated that receipt of author's copies was the usual practice, but, in the absence of definite evidence, we cannot conclude that Grote received such copies of the paper in question. Grote did have separates because the Proceedings (Proc. Acad. Nat. Sci. Philadelphia, vol. 19, p. 269, under "Donations to the Library") reported receiving a copy from Grote sometime in 1867. That Grote considered his paper to have been published in July 1866 may, but does not necessarily, indicate that he had received author's copies by that date. It would be helpful if we knew what Grote considered to constitute publication. Some authors of the past thought that the date manuscripts were accepted for publication was the publication date or at least utilized such dates in claiming priority over papers accepted at later dates by other publications. Grote may have considered the date printed to be the date of publication.

A search of the literature has produced the following information supporting Brown's cited year of publication, but no additional actual dates within the year are known. The Zoological Record (1867, vol. 4, p. 335) cited the date of the Grote paper as 1867. The receipt in 1867

(Proc. Ent. Soc. Philadelphia, vol. 6, 1866–1867) and Grote's separate are recorded under "Donations to the Library" (Proc. Acad. Nat. Sci. Philadelphia, 1867, vol. 19, pp. 259, 269). Dyar (1903, Bull. U.S. Nat. Mus., no. 52, p. 77) cites the description of *Horama texana* Grote (p. 184) as 1867. But on p. 43 Dyar cites *Nomiades antiacis mertila* Edwards (Proc. Ent. Soc. Philadelphia, vol. 6, p. 206) as 1866.

The date of publication for the part of the paper by Herrich-Schäffer appearing in volume 20 (Corresp. Blatt Zool.-Min. Verein. Regensburg) is cited as 1866 by all authorities known to me. In my search of the literature I have discovered no positive information as to the month of appearance of the different numbers of the volume. If the printer's date "January 1867" on the signatures containing part II of Grote's paper is correct, it is certain that Herrich-Schäffer's paper was published in 1866. Grote had a copy and cited the species described by Herrich-Schäffer. This action by Grote would not have been possible then unless the publication date was well before January 1867.

On the basis of our present information, it is not possible to state with certainty whether Grote's "Notes on the Zygaenidae of Cuba, Part I" appeared before or after the paper by Herrich-Schäffer. In the absence of conclusive evidence, it is undoubtedly best for the present to continue the usage of the Grote names. If the names of Herrich-Schäffer should subsequently be applied, it would be necessary to point out that four species of Ctenuchidae (Syntomidae) treated in the two works would also require a change in name.

The other generic synonym, *Laquea* Jordan, was based on a female and compared with a male of *Euschirropterus* [sic] Grote. Jordan noted a difference in the venation but was unaware that he was comparing the two sexes of the same species. *E. poeyi* Grote males have vein R_2 stalked with vein R_3 beyond R_4; in the female R_3 and R_4 are stalked beyond R_2. In 1901 Hampson placed *Laquea* Jordan in the synonymy of *Euschirropterus* [sic] Grote.

Euscirrhopterus poeyi Grote

Euscirrhopterus poeyi Grote, 1866 (July), Proc. Ent. Soc. Philadelphia, vol. 6, p. 176.

Heterandra disparilis Herrich-Schäffer, 1866 (September), Corresp.-Blatt Zool.-Min. Verein Regensburg (Naturw. Verein Regensburg), vol. 20, p. 134.

Euthisanotia argentata Druce, 1894, Ann. Mag. Nat. Hist., ser. 6, vol. 13, p. 352.

In females of the populations in Mexico and Guatemala (fig. 7), the orbicular spot of the forewing is slightly larger and darker than that in the specimens of the same sex from the typical Cuban population. In females from Cuba the orbicular spot may be completely lacking or indicated only by a minute spot (fig. 6).

Euscirrhopterus klagesi Jordan

Euschirropterus [sic] *klagesi* Jordan, 1908, Nov. Zool., vol. 15, p. 254, pl. 11, fig. 9.—Strand, 1912, Lepidopterorum catalogus, pt. 5, p. 28.—Draudt, 1919, *in* Seitz, Gross-Schmetterlinge der Erde, vol. 7, p. 4, pl. 1, row e.—Hampson, 1920, Catalogue of the Lepidoptera Phalaenae in the British Museum, Supplement, vol. 2, p. 583 (in error as synonym of *E. valkeri* [sic] Hampson).

Euschirropterus [sic] *poeyi pulverosa* Dyar, 1914, Proc. U.S. Nat. Mus., vol. 47, no. 2050, p. 175. [New synonymy.]

This species was placed in the synonymy of *E. valkeri* Hampson by Hampson in 1920, but that synonymy is erroneous for typical *klagesi*. Jordan had only females for study and considered the differences observed as subspecific when he described *E. klagesi* and *E. klagesi tucumanus*. The two names do not apply to the same species. The differences in maculation between the two species are greater for the males than for the females (figs. 1–4). The females of *klagesi* differ from those of *walkeri tucumanus* as follows: The distal part of the forewing from the tornus to the middle of the termen is suffused with white scales; the inner edge of the dark marginal band of the hindwing is rather dentate before the terminal orange spot, the width of the marginal band is about one-fourth the length of the wing, the fringe whitish from the apex to the terminal orange spot; the yellow of the undersurface of the hindwing usually extends across vein $Sc+R_1$ toward the costa in the postmedial area. In females of *walkeri tucumanus* the distal part of the forewing is nearly uniformly dark except the small white area basad of the dark terminal spot before the tornus; the marginal band of the hindwing is smoother along the inner edge, wider, the width about one-third the length of the wing, the fringe dark; the yellowish orange of the lower surface of the hindwing usually does not cross vein $Sc+R_1$ in the postmedial area. The male of *klagesi* differs considerably from that of *walkeri tucumanus;* in fact, it resembles that sex of *poeyi*, but the hindwing does not possess a dark marginal band, and it has but a single, well-developed, orange terminal spot. The male of *walkeri tucumanus* is smaller and resembles the females more in maculation.

The illustration of the female of *klagesi* provided by Jordan agrees with the females of the type series of *E. poeyi pulverosa* Dyar. Accordingly, I do not hesitate to place *pulverosa* in the synonymy of *klagesi*. Dyar indicated some of the differences between the females of *pulverosa* and *poeyi;* for example, the dark line separating the white area of the forewing from the dark area in *poeyi* is absent in *pulverosa*, and the reniform and orbicular spots of the forewing are shaped differently (figs. 4, 6, 7). In addition, the females of *pulverosa* (=*klagesi*) have only a single, distinct, marginal, black point on the termen of the forewing, a single yellow spot in the dark marginal band of the hind-

wing, and they have the apical part of the antenna flattened, appearing to be clubbed in a lateral view. The corresponding markings of females are different in *poeyi*, and the antenna is simple and filiform; in *klagesi* the length of the forewing of the male is 17 mm., that of the females 17 to 21 mm.

Jordan described *klagesi* from three females from Ciudad Bolívar, Orinoco [Ciudad Bolívar, Bolívar, Venezuela], July 1898, S. M. Klages. I select the specimen he illustrated, plate 11, figure 9, as the lectotype. The specimen is in the British Museum (Natural History) via the Rothschild collection and has been labeled as lectotype. Dyar's original series of *pulverosa* was composed of one male and six female cotypes from La Chorrera, Panama. The specimens are in the collection of the U.S. National Museum. I have selected and labeled one of the females as the lectotype. The genitalia of the lectotype have been mounted on slide number 294 by J. G. Franclemont, and the specimen is so labeled.

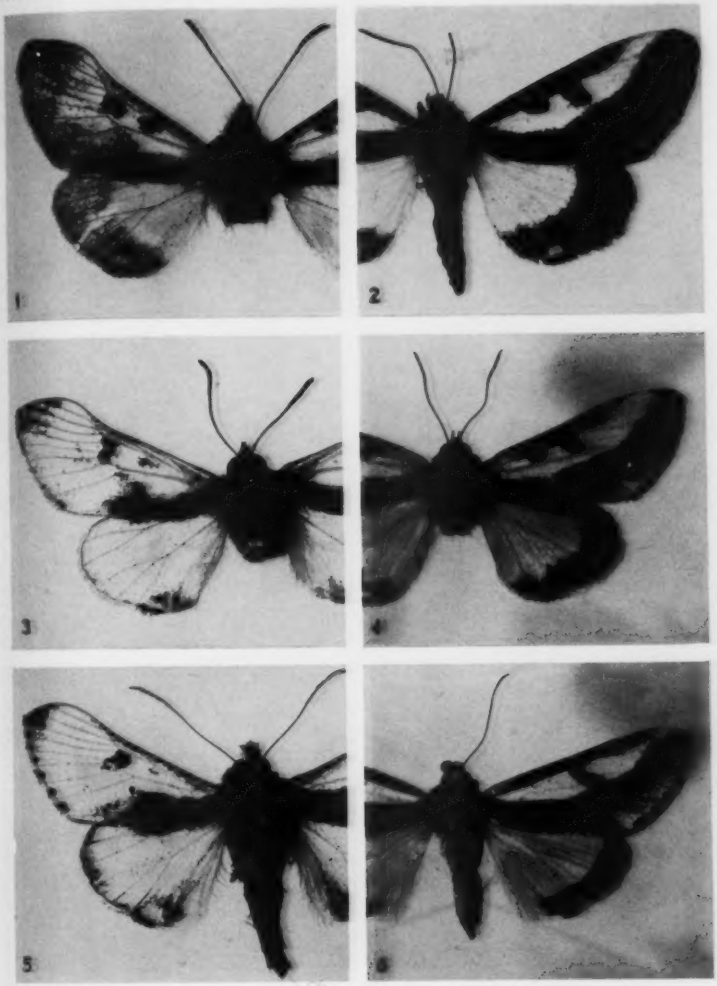
E. klagesi Jordan is known mainly from the type localities. Jordan discusses a specimen from Guayaquil, Ecuador, that is either referable to this species or to *walkeri tucumanus*. It will be necessary to restudy the specimen to determine the correct placement. Two females from Pernambuco, Brazil, in the U.S. National Museum presumably belong to this species but differ slightly as the brown postmedial marking of the forewing does not extend as far basad as it does in the females from Panama and Venezuela. Obviously more material of *klagesi* is needed to determine its distribution and the extent of its individual and population variability.

Euscirrhopterus walkeri Hampson

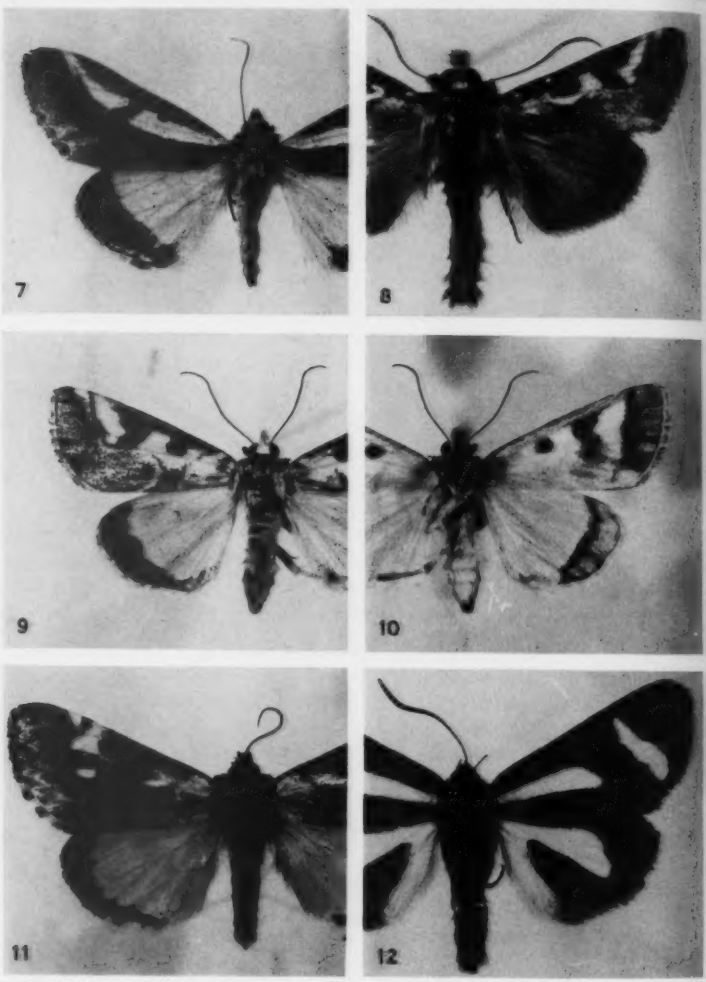
Euschirropterus [sic] *valkeri* Hampson, 1901, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 3, pp. 619, 620, fig. 270.—Strand, 1912, Lepidopterorum catalogus, pt. 5, p. 28.—Draudt, 1919, *in* Seitz, Die Gross-Schmetterlinge der Erde, vol. 7, p. 4, pl. 1, row b.—Hampson, 1920, Catalogue of the Lepidoptera Phalaenae in the British Museum, Supplement, vol. 2, p. 583.

Hampson obviously named this species after the collector of the type series, J. J. Walker, but he deliberately changed the "w" to a "v" as was his usual practice in latinizing scientific names. He usually also changed "k" to "c" but did not do so in this instance. Strand (1912, Lepidopterorum catalogus, pt. 5, p. 28) suggested that the name should be "*walkeri*." I agree with Strand and have emended the name accordingly.

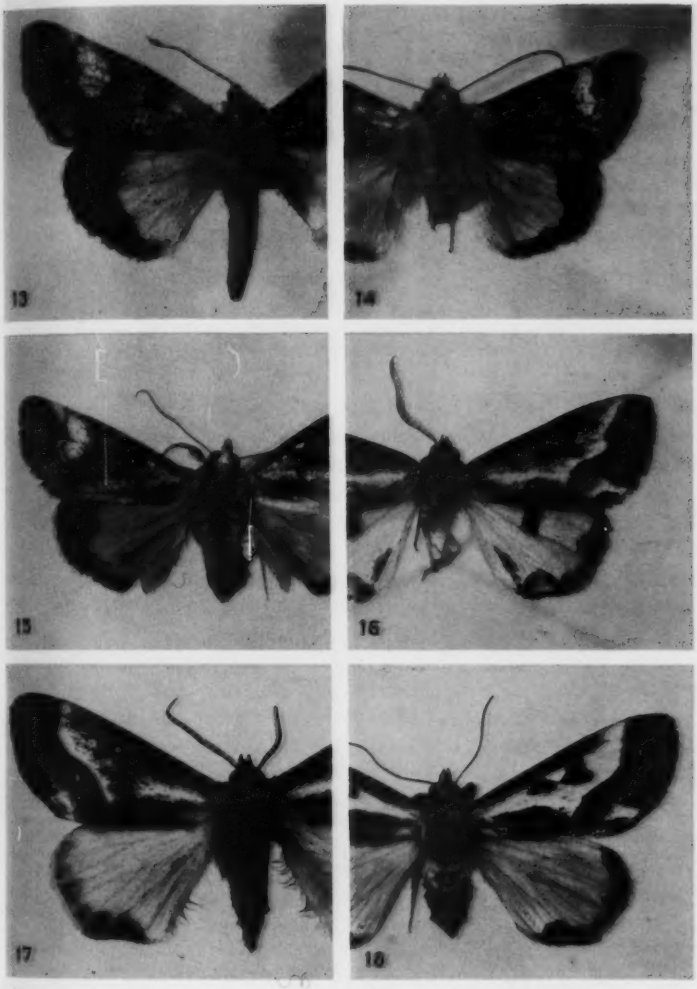
Typical *walkeri* is known to me only from the description and illustration of Hampson. The species was described from a male and female from Valparaiso, Chile. Hampson did not indicate which specimen was the type and noted no differences in size or



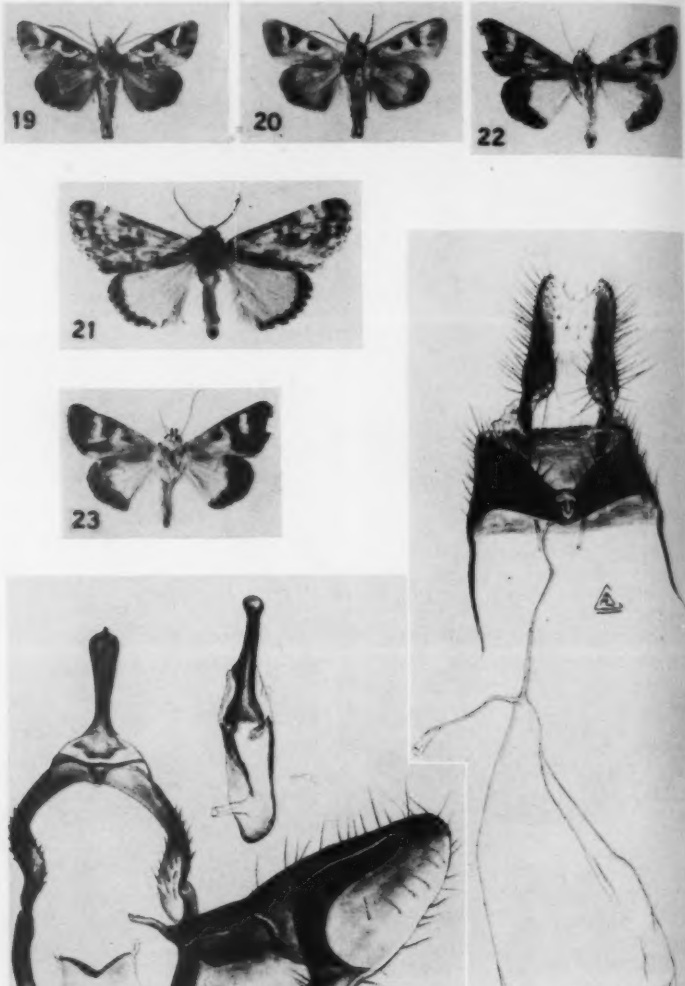
FIGURES 1–6.—Adults of species of *Euscirrhopterus* Grote, dorsal view: 1, 2, *E. walker*, *tucumanus* Jordan, ♂ and ♀, Tucumán, Argentina; 3, 4, *E. klagesi* Jordan, ♂ and ♀, La Chorrera, Panama; 5, 6, *E. poeyi* Grote, ♂ and ♀, Cuba.



FIGURES 7–12.—Adults of Neotropical agaristids: 7, *Euscirrhopterus poeyi* Grote, ♀ Mexico; 8, *Tuerta hemicycla* Hampson, ♂, Las Villas, Cuba; 9, 10, *T. hemicycla* Hampson, ♀, Pinar del Rio, Cuba, dorsal and ventral views; 11, *Cisaucula peruviana* (Druce), ♂, Incachaca, Cochabamba, Bolivia; 12, *Schalifrontia furcifer* Hampson, ♂, Santa Catarina, Brazil.



FIGURES 13–18.—Adults of Neotropical agaristids: 13, *Tuerta sabulosa* (Felder), ♀, Jalapa, Mexico; 14, 15, *T. sabulosa collectiora* new subspecies, type ♂, Baracoa, Cuba and paratype ♀, C. ortl. de Zapata Aguada, Las Villas, Cuba; 16, *Caularis lunata* Hampson, ♂, Santiago de Cuba, Oriente, Cuba; 17, *C. jamaicensis*, new species, ♂, Jamaica; 18, *C. undulans* Walker, ♀, Parguera, Isla Maguey, Puerto Rico.



FIGURES 19–25.—Adults and genitalia of Neotropical agaristids: 19, 20, *Tuerta hemicycla* Hampson, dorsal and ventral views, type ♂, Abaco, Bahama Islands; 21, *Cisaucula peruviana* (Druce), lectotype ♂, Santo Domingo, southeast Peru; 22, 23, *Tuerta sabulosa* (Felder), ♂ type *T. insulica* Hampson, Trinidad, dorsal and ventral views; 24, *Cisaucula peruviana* (Druce), ♂ genitalia, aedeagus removed and shown to the right; 25, *C. peruviana* (Druce), ♀ genitalia.

maculation of the two sexes. It is possible that he described only the male. The male was labeled as type by Hampson. That specimen is selected as lectotype, and it has been so labeled in the British Museum (Natural History).

***Euscirrhopterus walkeri tucumanus* Jordan**

Euschirropterus [sic] *klagesi tucumanus* Jordan, 1908, Nov. Zool., vol. 15, p. 254.

Euschirropterus [sic] *klagesi* var. *tucumanus* Jordan.—Strand, 1912, Lepidopterorum catalogus, pt. 5, p. 28.

Euschirropterus [sic] *klagesi* form *tucumana* Jordan.—Draudt, 1919, *in* Seitz, Die Gross-Schmetterlinge der Erde, vol. 7, p. 4.

Euschirropterus [sic] *valkeri tucumanus* Jordan.—Hampson, 1920, Catalogue of the Lepidoptera Phalaenae in the British Museum, Supplement, vol. 2, p. 583.

Hampson (1920) placed *klagesi* Jordan as a synonym of *walkeri* and treated *tucumanus* as a subspecies of it. I have already indicated that *klagesi* is a species distinct from *walkeri* and *tucumanus*. For the present it seems best to leave *tucumanus* as a subspecies of *walkeri*. The forewing of the known males of *tucumanus* have much more white than is indicated for *walkeri*. The determination of the actual status of *tucumanus* undoubtedly will require additional material and further revisional and biological studies. Length of the forewing: male, 14 mm.; female, 18 to 23 mm. Male and female are illustrated in figures 1 and 2.

The type series is in the British Museum (Natural History) via the Rothschild collection. The specimen labeled type is selected as lectotype and has been so labeled. There are 2 males and 18 females in the collection of the U.S. National Museum. Eight of the females in this collection belong to the dark form named *fusca* by Jordan. All known specimens are from Tucumán, Argentina.

***Euscirrhopterus discifera* Hampson**

Euschirropterus [sic] *discifera* Hampson, 1901, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 3, p. 621, pl. 51, fig. 9.—Strand, 1912, Lepidopterorum catalogus, pt. 5, p. 28.—Draudt, 1919, *in* Seitz, Die Gross-Schmetterlinge der Erde, vol. 7, p. 4, pl. 1, row a.

The illustrations provided by Hampson and Draudt will permit the identification of this species. The forewing has the basal dark mark and the reniform spot nearly black, darker than the dark distal part of the wing; the orbicular spot may be present or absent; the collar dark brown, nearly black, contrasting with the white head and gray thoracic scaling. Males are unknown. Length of the forewing female, 20 to 23 mm.

The type, a female from Santa Catarina, Brazil, is in the British Museum (Natural History). There are nine females, all from the type locality, in the U.S. National Museum.

Tuerta hemicycla Hampson

Tuerta hemicycla Hampson, 1904, Ann. Mag. Nat. Hist., ser. 7, vol. 14, p. 166; 1920, Catalogue of the Lepidoptera Phalaenae in the British Museum, Supplement, vol. 2, p. 588, pl. 71, fig. 10 [sic].

Hampson described this species from a unique male from Abaco, Bahama Islands. He figured the type in his second treatment (pl. 71, fig. 11). In the text of that paper (p. 588, and on the page of explanation of pl. 71), he erroneously refers the name *Tuerta hemicycla* Hampson to figure 10. There is a very definite misapplication of names to figures 9, 10, and 11 of that plate. The figure citations for *xenia* (p. 590, fig. 11) and for *insulica* (p. 585, fig. 9) are also incorrect and should be changed. The correct assignment should be as follows:

9. *Massagidia xenia*, ♂	Suppl. II,	p. 590	Cameroons
10. *Tuerta insulica*, ♂	" "	p. 585	Trinidad
11. *Tuerta hemicycla*, ♂	" "	p. 588	Bahamas

A pair of *hemicycla* is now in the collection of the U.S. National Museum through the kindness of Ing. F. de Zayas, Habana, Cuba. The male is from "C. ortl. de Zapata Aguada," Las Villas, Cuba, May 1956; the female from Viñales, Pinar del Rio, Cuba, July 1955. Both were collected by Zayas, who has other specimens. A female collected on Key Largo, Florida, July 20, 1962, by H. V. Weems, Jr., has also been studied. The species is sexually dimorphic. Both sexes from Cuba and the type from Abaco, Bahamas, are illustrated in this paper (figs. 8–10, 19, 20). The female is described as follows:

Slightly larger than male (length of forewing of male, 13 mm., that of female, 14 to 16 mm.); forewing broader, apex less acute. Eyes globoid, moderately large, smaller than in male, accordingly frons wider, white, entirely lacking long, black hairs that ornament frons of male. Antenna simple, filiform, rather stout, but not clubbed as in male. Maculation of upper surface of wings as illustrated (fig. 9). Ground color white, the area distad of the postmedial line dusted with fuscous scaling, small triangular patches of fuscous scales at apices of cells M_3 and Cu_1; some gray green in the ordinary spots, median part of costa, and distad of the postmedial line; all the transverse lines (the fine terminal line, short dentate subterminal line, postmedial line, and antemedial line) black; area between postmedial and antemedial lines from fold to inner margin metallic gray. Hindwing mostly yellow orange; a dark, marginal, fuscous band tapering toward anal angle, the band subterminal between Cu_2 and anal angle; some pale scales on apices of veins M_1, Cu_1 and Cu_2 in the marginal band; a small indistinct fuscous discal spot present; terminal line fine, black in color. Maculation of lower surface of wings as illustrated (fig. 10); basal area of hindwing yellow orange, remainder of wing white or fuscous as indicated in the illustration.

In general habitus, the female resembles *Tuerta sabulosa* (Felder), especially the form *albidisca* Draudt, but may be easily distinguished by the shape of the postmedial line (bent basad in posterior half of forewing as far as outer margin of orbicular spot, then parallel to antemedial line to inner margin), by the presence of a fine, black, terminal line in both wings, by the black triangular patches at the apices of cells M_2 and Cu_1 of the forewing, and by the narrower, fuscous, marginal band of the hindwing.

Judging from the pattern of maculation and the sexual dimorphism, this species appears to be intermediate to the other American species placed in *Tuerta* Walker and species of the genus *Euscirrhopterus* Grote. I do not believe that the American species should be placed in *Tuerta* or in the subgenus *Misa* Karsch, but as I do not have examples of *Tuerta chrysochlora* Walker or *Misa memnonia* Karsch, the two type-species from Africa, it seems best for the present to follow previous workers in the generic placement of *hemicycla* and to include the following species.

***Tuerta sabulosa* (Felder)**

Agarista sabulosa Felder, 1874, *in* Felder, Felder, and Rogenhofer, Zoologischer Theil, vol. 2, no. 2, Lepidoptera, *in* Reise der Österreichischen Fregatte Novara um die Erde . . . , table 107, fig. 11; 1875, ibid., explanation for tables 75 bis 107, p. 1.

?Eusemia sabulosa (Felder).—Boisduval, 1874, Rev. Mag. Zool., ser. 3, vol. 2, p. 106.

Metagarista sabulosa (Felder).—Butler, 1875, Ann. Mag. Nat. Hist., ser. 4, vol. 15, p. 139.

Scudyra sabulosa (Felder).—Neumoegen and Dyar, 1894, Journ. New York Ent. Soc., vol. 2, p. 19.

Copidryas sabulosa (Felder).—Druce, 1896, *in* Godman and Salvin, Biologia Centrali-Americana, Insecta, Lepidoptera, Heterocera, vol. 2, p. 329.

Tuerta (*Misa*) *sabulosa* (Boisduval).—Hampson, 1901, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 3, p. 625.

Tuerta sabulosa (Boisduval).—Holland, 1903, The moth book, p. 143, fig. 81.—Hampson, 1920, Catalogue of the Lepidoptera Phalaenae in the British Museum, Supplement, vol. 2, p. 588.—Forbes, 1930, Scientific survey of Porto Rico and the Virgin Islands, vol. 12, pt. 1, p. 43.

Tuerta sabulosa (Felder).—Strand, 1912, Lepidopterorum catalogus, pt. 5, p. 29.—Draudt, 1919, *in* Seitz, Die Gross-Schmetterlinge der Erde, vol. 7, p. 5, pl. 1, row b, row a (forms *albidisca* and *albiplaga*).

Misa sabulosa (Boisduval).—Dyar, 1903, Bull. 52, U.S. Nat. Mus., p. 96, no. 942.—Barnes and McDunnough, 1917, Check List of the Lepidoptera of Boreal America, p. 36, no. 1037.—McDunnough, 1938, Mem. So. California Acad. Sci., vol. 1, p. 53, no. 1107.—Wolcott (1948) 1951, Puerto Rico Univ. Journ. Agric., vol. 32, p. 581.

Agarista noctuiformis Möschler, 1890, Abh. Senck. Naturf. Ges., vol. 16, p. 112.—Gundlach, 1891, Soc. Espan. de Hist. Nat. Ann., vol. 20, p. 153.—Hampson, 1901, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 3, p. 625 (as synonym of *sabulosa*).

Tuerta noctuiformis (Möschler).—Wolcott, 1924, Porto Rico Dept. Agric. Journ., vol. 7, p. 160.

Tuerta insulica Hampson, 1909, Ann. Mag. Nat. Hist., ser. 8, vol. 4, p. 365.—Strand, 1912, Lepidopterorum catalogus, pt. 5, p. 29.—Hampson, 1920, Catalogue of the Lepidoptera Phalaenae in the British Museum, Supplement, vol. 2, p. 585, pl. 71, fig. 9 [sic, recte fig. 10]. [New synonymy.]

A complete synonymy has been presented to indicate the incorrect author citations for this species. All the American lepidopterists have been in error in following Hampson's citation of Boisduval as author of *sabulosa*. Boisduval gives a complete, accurate reference to the Felder plate and figure and credits the name to Felder. Hampson gave no reason for his use of Boisduval as author. It is possible that he did not consider the Felder treatment to constitute a description. The original description by Felder consists of only a colored illustration of the moth and the name "*A. sabulosa* F." Felder figured 25 moths on table 107 including 10 species assigned to *Agarista*. He used the complete generic name for the first species of the genus but used only the abbreviation "*A.*" for the remainder.

This species is recorded in the literature from San Francisco, Calif. (Felder, Felder, and Rogenhofer, 1875), New Mexico (Hampson, 1901), Arizona (Neumoegen and Dyar, 1894), Mexico and Guatemala (Druce, 1896) and Porto Rico (Möschler, 1890, *noctuiformis*). It is doubtful that this species occurs in the United States. The records from Arizona and New Mexico are undoubtedly referable to *Gerra sevorsa* (Grote). *G. sevorsa* (Grote) does occur in those States and was treated as a synonym of *sabulosa* by Neumoegen and Dyar (1894) and by Hampson (1901). Hampson (1920) corrected the erroneous synonym, but he did not change the recorded distribution for *sabulosa*. The type locality "San Francisco, California" must certainly be an error. *Tuerta sabulosa* (Felder) is known to occur in Mexico, Guatemala, El Salvador, and Porto Rico. *Tuerta insulica* Hampson from Trinidad is referred to the synonymy of *sabulosa* in the present paper so that locality may be added to the known distribution. Figures 22 and 23 illustrate the upper and lower surfaces of the wings of the type of *insulica* in the British Museum (Natural History). It is a battered example of *sabulosa* in which the white areas of the right forewing are aberrant. There is one specimen in the collection of the U.S. National Museum, via the Dognin collection, labeled "Paraguay, Pouillon." I do not know whether this locality record is authentic.

There is considerable variation in amount and position of white coloration on the forewings of *sabulosa*. Draudt (1919) named two forms, *albiplaga* (a white spot present distad of reniform spot, median area otherwise dark gray) and *albidisca* (a white spot present distad of reniform spot, but median area around ordinary spots and to the

fold white). Draudt considered the typical form to be that in which the area between the postmedial and antemedial lines is gray, the area distad of the reniform spot not white. In the series of the species in the U.S. National Museum there are all degrees of intermediates between the "forms" of Draudt. Therefore, I do not believe these names are representative of distinct seasonal or population entities.

***Tuerta sabulosa collectiora*, new subspecies**

All of the known specimens of *sabulosa* from Cuba differ from those of other areas as follows: The inner margin of the dark marginal band of the hindwing is excavate in cells M_3 and Cu_1 (figs. 14, 15), whereas the dark marginal band of the hindwing of typical *sabulosa* (fig. 13) is not conspicuously reduced in width in that part of the wing. The genitalia of the Cuban specimens do not differ from those of typical *sabulosa*. The Cuban population is treated as a subspecies because of the different phenotype and the geographic isolation.

Type male, Baracoa, Oriente, Cuba, William Schaus, male genitalia slide number 301, J. G. Franclemont; one male paratype, same place and collector, male genitalia slide number 300, J. G. Franclemont; one male paratype, Tanamo, Oriente, Cuba, Dec., William Schaus; one male and one female paratypes, C. ortl. de Zapata Aguada, Las Villas, Cuba, May 1956, F. de Zayas, in the U.S. National Museum, Washington, D.C.

***Gerra radicalis* Walker**

Gerra radicalis Walker, 1864, List of the specimens of lepidopterous insects in the collection of the British Museum, pt. 31, p. 141.

Diamuna adrasta Druce, 1889, *in* Godman and Salvin, Biologia Centrali-Americana, Insecta, Lepidoptera, Heterocera, vol. 1, p. 334, pl. 30, fig. 20.

Three specimens of *Gerra radicalis* Walker from Arizona have been discovered standing in the series of *Gerra sevorsa* (Grote). Two are labeled "Huachuca Mts.," the other is from Palmerly, Cochise County. This species was previously known only from Mexico.

***Schalifrontia furcifer* Hampson**

Schalifrontia furcifer Hampson, 1901, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 3, p. 654, fig. 288.—Strand, 1912, Lepidopterorum catalogus, pt. 5, p. 38.—Draudt, 1919, *in* Seitz, Die Gross-Schmetterlinge der Erde, vol. 7, p. 7, pl. 1, row c.

This genus and species were described from a unique female from Santa Catarina, Brazil. The type is in the collection of the British Museum (Natural History). In the collection of the U.S. National Museum there is another female also from Santa Catarina, Brazil, and five males from Espirito Santo, Rio [Rio de Janeiro?], St. Catherines [Santa Catarina], and Joinville, Santa Catarina, Brazil.

Hampson described the color of the pale areas of the wings as "orange-yellow." The female specimen in the U.S. National Museum is deep yellow with a slight orange tinge. It is not nearly as orange as indicated by the figure provided by Draudt (1919). The males (fig. 12) resemble the female, except the pale markings of the wings are slightly smaller, pale yellow, nearly white in color, and the ventral surface of the body is nearly uniformly dark brown or black. There is a lateral line of yellow on abdominal segments 4–7. One male has a few yellow scales on abdominal sternite 3 and some of the males have some yellow scales and hair between the bases of the forelegs. Hampson stated that the type has a broad ventral yellow stripe in addition to the lateral abdominal stripes. In the female in the U.S. National Museum the abdomen has been removed and the genitalia have been prepared on a slide; thus, the coloration of the abdomen is not determinable. The orange-yellow, lateral spots of the patagia of the male are like those of the female.

Cisaucula, new genus

Type-species: *Copidryas peruviana* Druce, 1910=*Cisaucula peruviana* (Druce).

The species on which this genus is based is not congeneric with the species of *Copidryas* Grote. The modification of the aedeagus (apical half greatly reduced in diameter and very strongly sclerotized) indicates it belongs with the complex of genera including *Rhosus* Walker, *Erocha* Walker, and *Aucula* Walker. This complex contains remarkably similar groups that are badly mixed and that differ mainly in general pattern of maculation and in characters of the male genitalia. *Copidryas peruviana* Druce differs from all of the species assigned to the three previously mentioned genera in the pattern of maculation of the wings (figs. 11, 21) and in having simple antennae in the male (bipectinate in the other genera). The male genitalia are also distinct although some characters do agree with one or another of the other genera.

Description: Eyes large, hemispherical, naked; ocelli small, adnate to upper margin of eye immediately caudad of base of antenna; antenna simple, pubescent ventrally; frons produced into a blunt, rounded prominence with slightly raised rim, the latter rounded ventrally and convergent dorsally, prominence exceeding anterior margin of eye by half length of eye; labial palpus small, slightly exceeding frons, slightly oblique, third segment slightly decumbent, clothed with appressed scales, slightly shorter than second segment, second and third segments fringed ventrally with long, loose, hairlike scales. Vestiture of head and thorax of hair or hairlike scales, without crests. Abdomen with a prominent dorsal tuft of hairs on first seg-

ment; a pair of coremata and grooves on sternum of first abdominal segment. Legs with large tufts and fringes of long, white hair. Pectus also clothed with hair. Forewing triangular, broad, termen evenly rounded; inner margin nearly straight. Hindwing broad, with termen evenly rounded. Pattern of maculation as illustrated (figs. 11, 21). Venation of wings uncomplicated. Forewing with R_1 and Cu_2 from outer third of either side of discal cell; R_2 from R_3 adnate with R_{4+5} and R_4 to form accessory cell; R_3+R_{4+5} shortly stalked; R_3+R_4 also shortly stalked; M_1 from upper angle of discal cell; M_2 from below middle of discocellulars, base slightly curved, convergent with M_3; M_3 from just above lower angle of discal cell; Cu_1 from lower angle of cell. Hindwing with $Sc+R_1$ fused with cell near base only; Rs and M_1 shortly stalked from upper angle of discal cell; M_2 weak, from near middle of discocellulars; M_3 and Cu_1 connate from lower angle of discal cell; Cu_2 from outer third of cell. Male genitalia as illustrated (fig. 24), uncus explanate distally, apex hooked, a thin dorsal, longitudinal carina present; tergumen simple; vinculum with elongate dorsal arms, saccus scarcely developed; juxta large, triangularly emarginate dorsally; valves symmetrical, moderately broad, apex rounded, corona nearly absent, clasper large, curved toward apex of valve, sacculus emarginate at apical third; apical half of aedeagus reduced in diameter, strongly sclerotized, extreme apex a rounded knob. Female genitalia as illustrated (fig. 25), simple, a slight irregular sclerotization around ostium; ductus bursae extremely small, elongate, membranous; bursa copulatrix an oval membranous sac; ductus seminalis about as large as ductus bursae, originating from caudal end of bursa copulatrix.

***Cisaucula peruviana* (Druce), new combination**

Copidryas peruviana Druce, 1910, Ann. Mag. Nat. Hist., ser. 8, vol. 6, p. 168.—Strand, 1912, Lepidopterorum catalogus, pt. 5, p. 28.—Draudt, 1919, *in* Seitz, Die Gross-Schmetterlinge der Erde, vol. 7, p. 4.

According to the original description, Druce had at least a male and a female from Santo Domingo, southeast Peru, 6000 feet, wet season, G. Ockenden, but he failed to indicate which was the type. The male illustrated in the present paper (fig. 21) is labeled type, and it is selected as lectotype. It is in the collection of the British Museum (Natural History). There are five males and one female from Incachaca, Cochabamba, Bolivia, J. Steinbach, in the collection of the U.S. National Museum.

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